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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,098	11/03/2003	Aoi Tanaka	10873.1321US01	2814

7590 02/09/2007
Hamre, Schumann, Mueller & Larson, P.C.
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Minneapolis, MN 55402

EXAMINER

THOMPSON, MELISSA

ART UNIT	PAPER NUMBER
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1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/700,098

Applicant(s)

TANAKA ET AL.

Examiner

Melissa B. Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 19 is/are pending in the application.
- 4a) Of the above claim(s) 17 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :2/25/2004,
7/26/2004, 9/16/2005, 11/17/2006.

DETAILED ACTION

Response to Amendment

1. In response to the amendment received November 17, 2006:
 - a. Claims 17-18 have been cancelled as per applicant's request. Claims 1-16 and 19 are pending;
 - b. The previous priority objection has been withdrawn in light of the amendment;
 - c. The previous drawing objections have been withdrawn in light of the amendment;
 - d. The previous claim objection has been withdrawn in light of the amendment;
 - e. The previous 112 rejection has been withdrawn in light of the amendment;

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

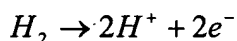
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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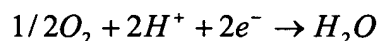
2. Claims 1-14, 16 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Gyoten et al. (U.S. Patent Number 6,746,793 B1).

Gyoten et al. disclose a polymer electrolyte fuel cell comprising a pair of electrodes having each a catalytic reaction layers, the electrodes sandwiching a polymer electrolyte membrane wherein a hydrogen ion diffusion layer is provided on either surface of a catalyst particle (column 15, lines 29-33). The hydrogen ion diffusion layer can be formed by chemically bonding a silane compound to the surface of the catalyst particle or the catalyst particle (column 15, lines 34-36). The silane compound disclosed has a mean molecular weight of 40-10,000 (column 19, lines 10-55). Gyoten et al. disclose modifying the surface of the catalyst particle or the carrier of the catalyst particle with an organic compound having a basic functional group, the hydrogen ion diffusion layer can be formed with the organic compound and a hydrogen ion-conductive solid electrolyte (column 15, lines 37-41). The silane compound has a functional group capable of dissociating a hydrogen ion at the end and has at least one of a hydrocarbon chain and a fluorocarbon chain (column 15, lines 46-50). The carrier which can be a carbon particle or carbon fiber may be chemically bonded to a silane compound through the intermediary of a carboxyl group (column 15, lines 51-54 and Figure 13). Gyoten et al. disclose a hydrolysable group that converts into an activated silanol group and reacts with an oxide on the surface, which permits formation of a covalent bond; and making the silane compound have a hydrogen ion dissociating functional group such as sulfonic acid group or carboxyl group, a

hydrogen ion conductive layer can be made to coat the catalyst surface in the monomolecular form (column 16, lines 6-14). Gyoten et al. disclose that by making this silane compound have a basic functional group containing a nitrogen atom having a lone pair at the end, for example an amid group or an amine group, mutual reaction with a polymer electrolyte having a residual group of an acid such as sulfonic acid can be caused (column 17, lines 44-49). Gyoten et al. disclose conducting HCl elimination reaction with $-\text{SiCl}_3$ group, $-\text{OH}$ group or other function group or oxide, a monomolecular adsorption film is formed with a silane compound on the surface of the catalyst or on the surface of the carbon carrier (column 18-19, lines 63-1). Gyoten et al. disclose the formula:



occurs in the hydrogen electrode, and a reaction represented by:



occurs in the oxygen electrode (column 16, lines 47-49). Gyoten et al. disclose a carbon powder with platinum particles carried thereon (column 18, lines 55-56).

With respect to claims 12, 13, and 14, Gyoten et al. disclose a carbon powder as other particles, which are an inorganic substance and is an electron conductor.

Gyoten et al. disclose that the carbon powder used has an average diameter of 2 to 10 microns (column 9, lines 22-23). Gyoten et al. disclose a catalyst layer as having a thickness of 30-100 microns (column 1, lines 43-44).

3. Claims 1, 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Stonehart et al (JP Publication Number 06-111827).

Stonehart et al. disclose a solid electrolyte fuel cell which comprises a cathode a with a catalytic layer and an anode with a catalytic layer (constitution). Stonehart et al. disclose making an ion exchange membrane with silica and Nafion (paragraph 20). Stonehart et al. disclose a cathode and anode catalyst bed which included depositing platinum on the surface of the carbon particle, Nafion, and a silica (paragraph 21). This mixture, which makes up the catalyst, includes carbon which is an electron conductor and silica which is an inorganic particle. The hydrogen of -OH on the surface of the silica particles would form a hydrogen bond with the SO_3^- of the Nafion present in the catalyst layer.

Response to Arguments

4. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa B. Thompson whose telephone number is (571) 272-2758. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Trainer, Susy Tsang-Foster can be reached on (571) 272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MBT


SUSY TSANG-FOSTER
PRIMARY EXAMINER